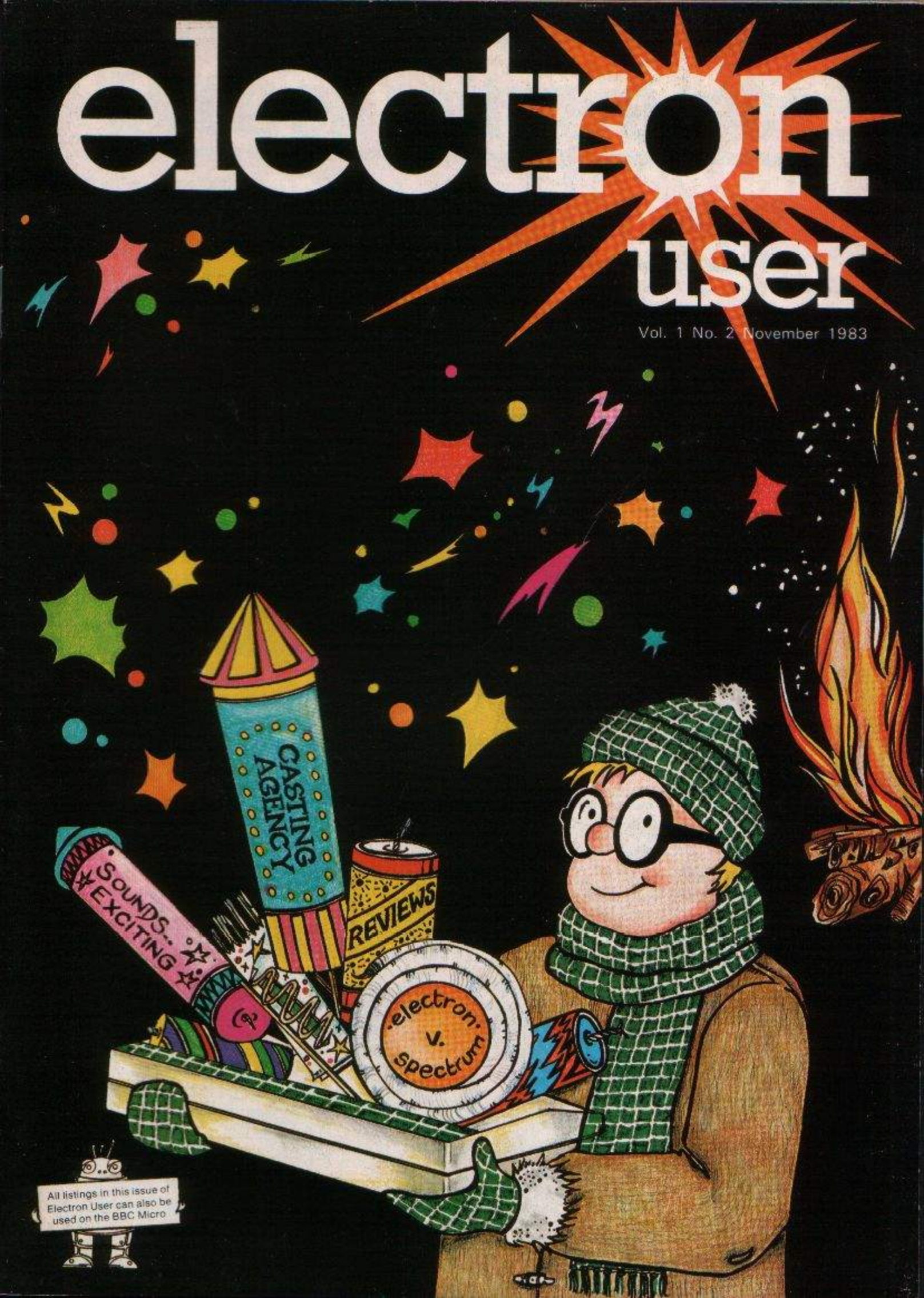
electron user

Vol. 1 No. 2 November 1983



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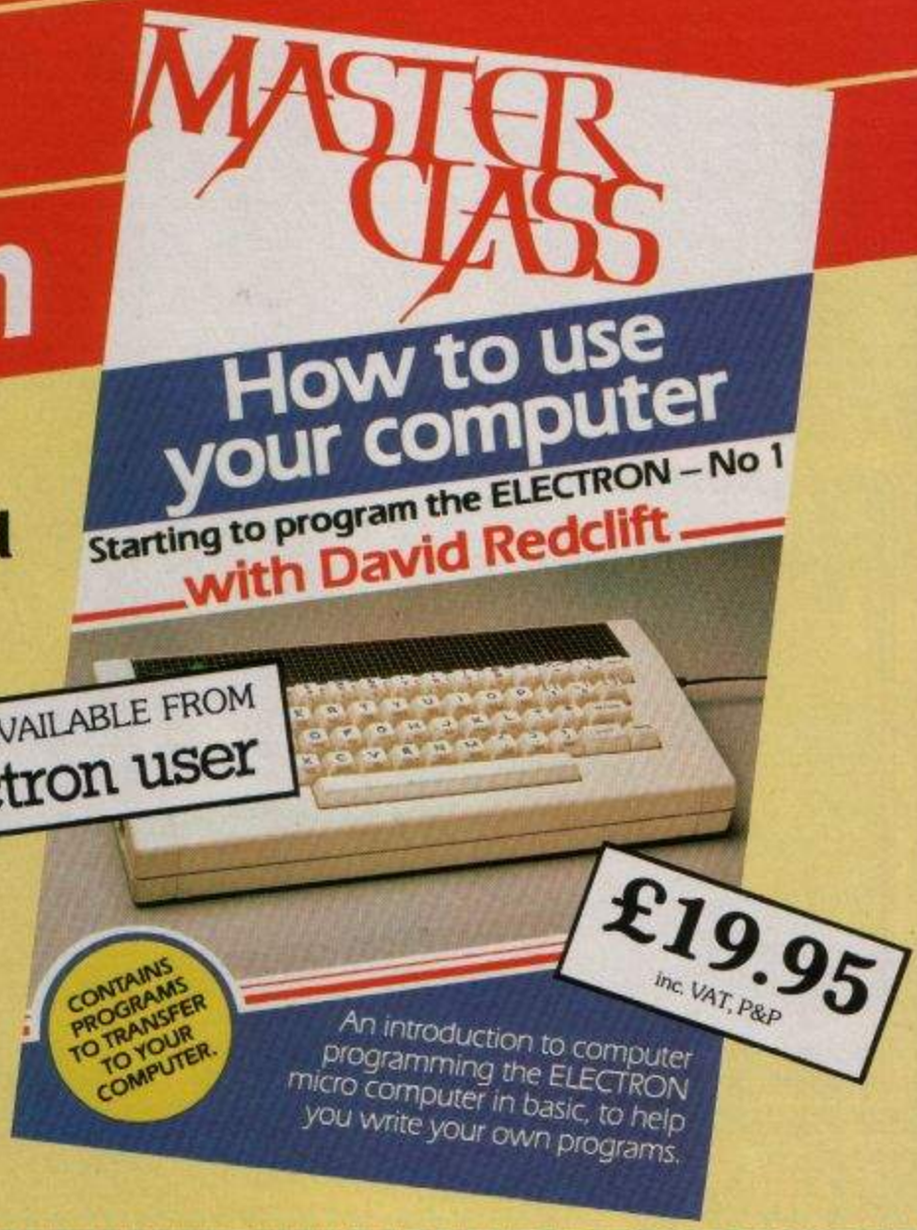

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Electron software race gets under way

THE arrival of the Acorn Electron has created a stir among many firms that supply the micro-computer industry.

It's predicted phenomenal success means a rich new market for software producers and its expansion possibilities are already tempting hardware designers.

The lead in the race to produce software for the Electron seems to be shared between three firms.

As might be expected, Acornsoft was the first to launch a series of packages designed for the Electron, ranging from old favourites like arcade games and educational programs to utility packages and alternative computer languages such as Forth and Lisp.

Big names like A & F Computing and Micro Power have been racing to convert the best of their BBC Micro games to work on the Electron. The main difficulty they have encountered is that the Electron, though sharing the same Basic as the BBC Micro, is slower – although a fast micro in its own right.

The software has to be adjusted to compensate for the reduced speed and some other, minor, hardware differences between the two machines. But both companies say they will have a comprehensive range of Electron software in the very near future.

In fact so great is the expected demand for the Electron that W.H. Smith had ordered 12,500 cassettes from Micro Power before a single Electron had been sold.

All over the country other software houses are tooling up to meet the challenge provided by the micro that may be the best selling in history.

And it's not just the software houses who are bracing themselves for the Electron boom. The companies who produce hardware add-ons are aware of its expansion possibilities and are developing products with that in mind.

The race to be first to produce hardware add-ons seems to have been won by Sir Computers, of Cardiff. Already it has a combined A to D (joystick) and Centronics printer interface which will cost about £40.

Plans for the near future include a ROM board to enable eventual expansion and an adapter that will give the Electron Mode 7 – the teletext mode.

Over in Cambridge, Acorn is certainly working on hardware to use the expansion port, though there are no firm details as yet.

So even before the Electron has been sold in any substantial numbers the microcomputer industry is rushing to support it.

W.H. Smith has started selling it in their shops – the first time the firm has ever marketed an "unproven" micro.

With practical support like this, coupled with the tremendous amount of interest and activity in everything to do with the Electron, Acorn's new baby has been launched with more prospects for its ultimate success than any other micro has ever enjoyed in the past.

Production rate is doubled

THE demand for the Electron is so intense that the production line in Malaysia, where they are working overtime to meet Acorn's order for 100,000 machines, cannot cope.

An urgent SOS last month to the Welsh factory that makes the BBC Micro has resulted in agreement to speed up the creation of a second Electron production line in Gwent.

The firm has agreed to produce an additional 100,000 Electrons.

To do so it is taking on another 100 workers, and has promised Acorn they will be able to turn out 4,000 machines a week, starting in January.

The factory is being extended to accommodate the extra plant, and a rush order has gone out for newly-developed automatic insertion and test equipment.

The head of the firm, Henry Kroch, said: "We have been making the BBC Micro for more than a year. So far our production has increased tenfold".

First production models of the Electron were airlifted from Singapore to Britain in September and were immediately snapped up by dealers and software developers.

As demand from potential Electron users escalated, the Malaysian manufacturers promised that supplies would be shipped out weekly. Even so it is unlikely sufficient machines will be available to meet all pre-Christmas orders.

electron user

Electron User welcomes program listings and articles for publication. Listings should be accompanied by cassette tape or disc.

Send to:
Electron User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

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Casting Agency

EVERY month in Casting Agency we'll be giving you a selection of user-defined characters.

In a later issue we'll show you how to make your own. But, for the time being, let's just concentrate on how to use the ones we've got.

It's quite straightforward, you'll be glad to hear.

Let's take the mouse. You'll see that the letters and numbers that define it are:

```
VDU23,224,99,99,28,28,72,92,
92 ,124
```

The VDU23 part tells the Electron that what comes next will define a particular shape.

The next figure tells the micro the code number that will be used to refer to the shape. In this case the mouse will be known by the number 224.

However the micro won't know what you're doing until you actually type in VDU23, the reference number, the following figures and commas, and then press the Return key.

That is, before you can use the user-defined character you actually have to enter, or define, it.

You can, if you want, define it during a program by a line such as:

```
10 VDU23,224,99,99,28,28,72,
92,92 ,124
```

Once you've defined the character you can then tell the micro to display it by referring to its code number. In this case it is 224.

You use the PRINT and CHR$ keywords to instruct the micro to do this.

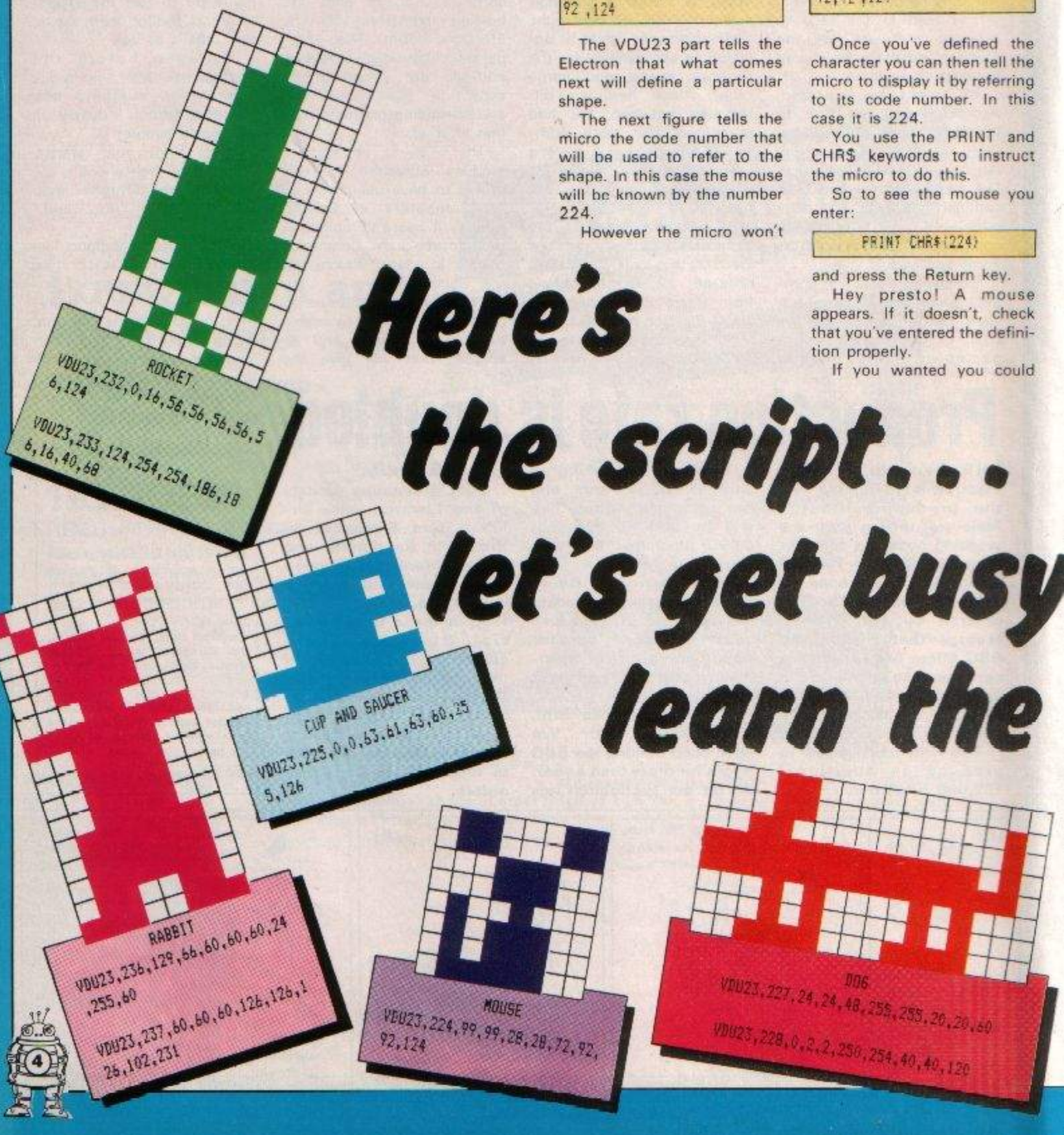
So to see the mouse you enter:

```
PRINT CHR$(224)
```

and press the Return key.

Hey presto! A mouse appears. If it doesn't, check that you've entered the definition properly.

If you wanted you could



Here's the script... let's get busy learn the

call up the mouse in a program line such as:

```
20 PRINT CHR$(224)
```

But remember the character must have been previously defined or the Electron will be confused!

Incidentally you might find that mode 1 or mode 2 will display the little chap rather better than the mode 6 which you're in when you switch the Electron on.

Just type in MODE 1 or MODE 2 and press Return to get the mode you want.

So, to recap, you must define the character by entering the appropriate VDU23 statement. Then you can display it on the screen using its code number, PRINT and CHR$.

It's really quite simple to use.

The trouble is that all these code numbers are fairly similar and can easily be confused.

Also they don't mean very much. Is 238 a dragon or a spoon? Or is it anything at all?

One way to make things clearer – after you've defined the characters – is to label them in a meaningful way.

We know that CHR$(224) contains the mouse, because we can PRINT it onto the screen.

So let's label CHR$(224).

We do this by thinking up a name (in this case "mouse").

Then we put a $ sign on the end to show that it's a label. This makes it equal to CHR$(244).

It's easier to do than to read about. All you do is enter:

```
mouse$=CHR$(224)
```

and press the RETURN key. Then if you want a mouse you can just use:

```
PRINT mouse$
```

instead of:

```
PRINT CHR$(224)
```

It makes things a lot easier.

"Ah", but you might ask, "What about the dog? That's got two VDU23 s to define it. What do we do with two of them?"

Again, it's quite simple. If you look at the picture you'll see that the dog is made up of two characters put together to form a larger one.

All you do is to type in both VDU23 statements, in this case:

```
VDU23,227,24,24,48,255,255,
20, 20,60
```

and

```
VDU23,228,0,2,2,250,254,40,
40, 120
```

and don't forget to press Return after each one.

To get your dog on screen just use:

```
PRINT CHR$(227) CHR$(228)
```

and it will appear.

Make sure that you get them in the right order or you'll get the back before the front.

To make it easier to use, let's label it again. In the case of two VDU23 statements we just add the two CHR$ together.

Let's use the label "dog$" – you mustn't forget the $ on the end.

Enter:

```
dog$=CHR$(227)+CHR$(228)
```

and now you can get your dog by:

```
PRINT dog$
```

So if you have two VDU23 statements that define bits of a larger character you just print them one after the other or add them together in a label.

This isn't just limited to two parts of a figure. You can have three or more pieces fitted together to form a larger character.

Just remember to keep them in order or you'll get some funny looking characters on the screen!

Finally you'll notice that some of the Casting Agency characters consist of two or more parts but they're not in a straight line like the dog.

They're one on top of the other. The rocket is a case in point.

It's not difficult to produce the rocket. Just define the parts as before by typing in the two VDU23 statements.

You'll then have the two bits of the rocket as CHR$(232) and CHR$(233).

The problem is to put the bits on the screen one on top of the other so that they join to form a rocket.

It's easily solved. Just make a label again and add the bits as before, only with a little bit of "magic" to produce the desired result.

In this case let's use the label "rocket$". All that's needed is to enter:

```
rocket$=CHR$(232) + CHR$(8)
+ CHR$(10) + CHR$(233)
```

Now, to produce your rocket just enter:

```
PRINT rocket$
```

and it will appear on the screen.

The "magic" is to include CHR$(8) and CHR$(10) in between the two bits of the defined character.

CHR$(8) moves the print cursor back one position and CHR$(10) moves it down one position.

Using one after the other moves the cursor directly below the last thing printed.

In this case the bottom part of the rocket appears directly below the top half as desired.

Don't worry too much if you don't understand the print cursor part.

All you have to know is that to print one part of a defined character directly on top of the other you just add them together in a label with CHR$(8) + CHR$(10) between them.

For example, to produce the rabbit we just enter the VDU23 statements. Then we make the label up as follows:

```
rabbit$ = CHR$(236) + CHR$
(8) + CHR$(10) + CHR$(237)
```

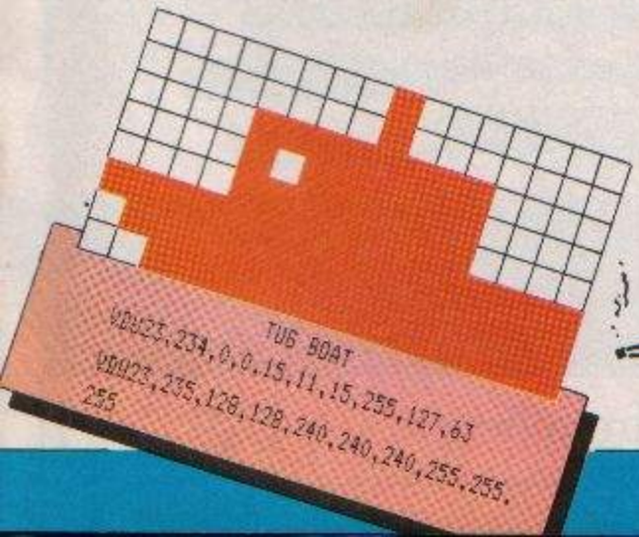
Now you can produce your rabbit by:

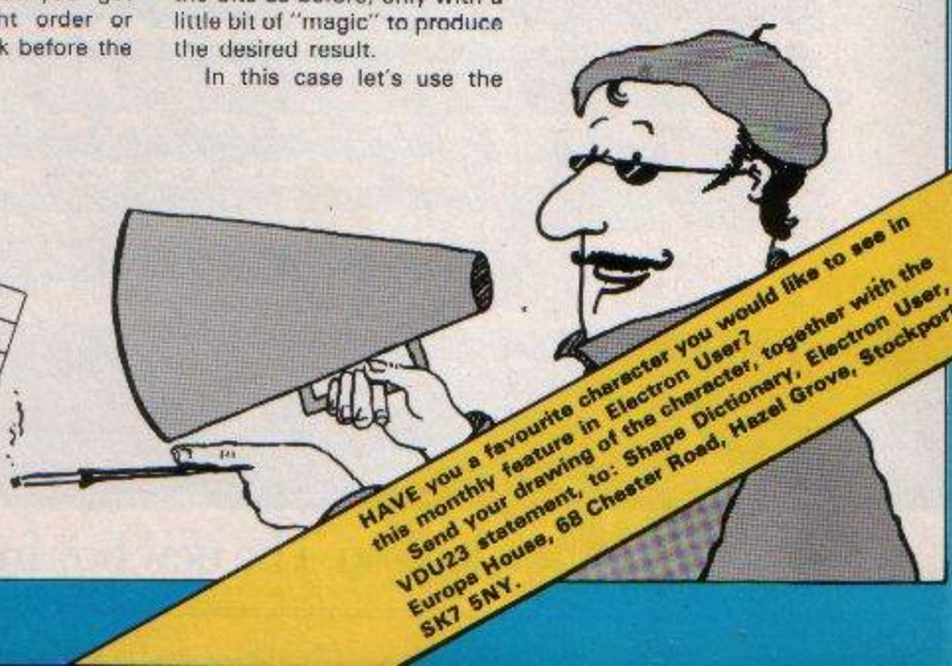
```
PRINT rabbit$
```

And that's all there is to it.

Have fun with the characters from the Casting Agency!

and lines





HAVE you a favourite character you would like to see in this monthly feature in Electron User? Send your drawing of the character, together with the VDU23 statement, to: Shape Dictionary, Electron User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

The new boy from Acorn already has a gang of playmates.

The Acorn Electron, Britain's most exciting new home micro, already has a range of software programs specially designed for it by Acornsoft, makers of software for the BBC Micro.

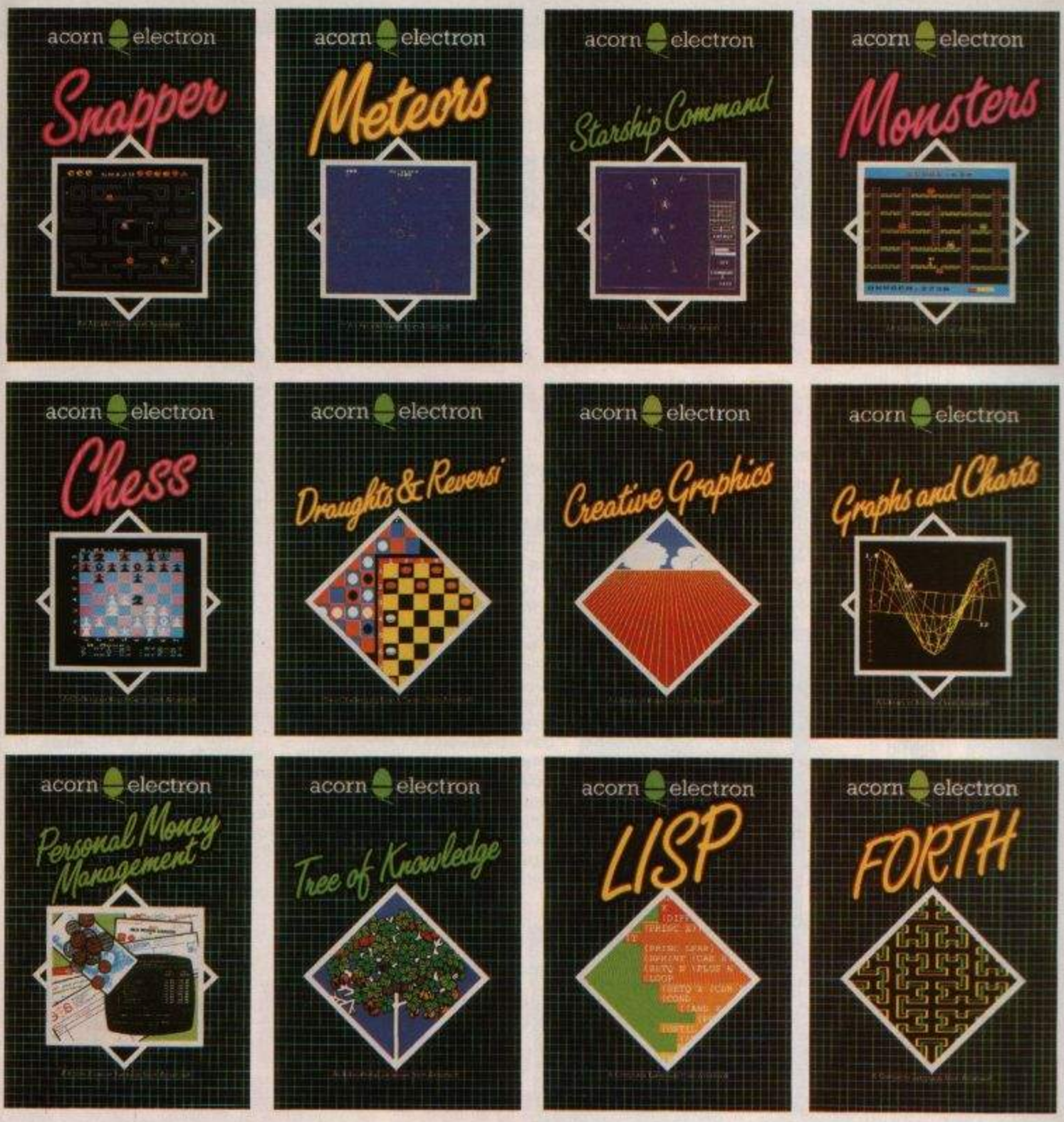
There are six mind-boggling games, two programming languages, two exciting graphics cassettes, a home educational program and a personal money management program.

All of which will soon help familiarize you with the Electron and show you how to get the maximum enjoyment out of it straight from the word go.

Of course, we'll be constantly designing new software to help you fully realise the Electron's limitless potential.

You'll find all the programs featured here, plus the full

The Electron. The new boy from Acorn.



range of programs for the BBC Micro, available at selected W.H. Smith branches and at your local Acorn stockist. (To find out where they are call 01-200 0200.)

Alternatively, you can send off for the Acornsoft Electron or BBC Micro catalogue, by writing to: Acornsoft, c/o Vector Marketing, Denington Estate, Wellingborough, Northants NN8 2RL.

ACORNSOFT

```
10 REM Roman Candle
20 MODE 2
30 PROCinit
40 REPEAT
50 VDU 19,15,1;0;
60 SOUND &10,-15,7,45
   :SOUND &11,1,RND(255)
   ,45
   :TIME =0
   :REPEAT UNTIL TIME >10
70 VDU 19,15,0;0;
80 C%=RND(6)
   :X%=576
   :D%=(RND(3)-2)*16
   :Y%=192
   :E%=120
90 REPEAT
100 Y%=Y%+E%
   :E%=E%-10
110 GCOL 3,C%
   :VDU 19,C%,RND(6);0;
120 MOVE X%,Y%
   :VDU 226
   :MOVE A%,B%
   :VDU 226
130 A%=X%
   :B%=Y%
   :X%=X%+D%
140 UNTIL Y%<-32
150 UNTIL 0
160 DEF PROCinit
170 A%=0
   :B%=0
   :GCOL 0,15
180 MOVE 595,160
   :PLOT 1,-30,30
   :MOVE 595,160
   :PLOT 1,-30,-10
190 MOVE 621,160
   :PLOT 1,30,30
   :MOVE 621,160
   :PLOT 1,30,-10
200 VDU 23,224,&FF,&FF,&FF
   ,&FF,&FF,&FF,&FF,&FF
210 VDU 23,225,24,24,24
   ,24,60,60,60,&FF
220 VDU 23,226,24,60,126
   ,255,255,126,60,24
230 PRINT TAB(9,27);
   :VDU 225,8,10
   :FOR N%=0TO 2
   :COLOUR (RND(6))
   :VDU 224,8,10
   :NEXT
   :VDU 5
240 ENVELOPE 1,129,1,0,0
   ,200,0,0,126,0,0,12
   ,126,126
250 ENDPROC
```

```
10 REM Wheel
20 MODE 2
70 VDU 29,640;512;
   :MOVE 0,0
   :N%=0
   :R=400
80 FOR I=20*PI TO 0
   STEP -.1
90 GCOL 0,N%
   :N%=(N%+1)MOD 15
100 MOVE 0,0
   :R=R-.5
110 PLOT 85,R*COS I,R*
   SIN I
120 NEXT
150 VDU 20
155 E=150
160 REPEAT
170 D%=0
180 FOR D%=1TO 7
190 FOR C%=1TO 15
195 E=E-.3
200 FOR N%=0 TO E
   :NEXT
210 VDU 19,C%,D%;0;
220 NEXT
222 IF E<10 E=150
225 NEXT
230 UNTIL 0
```

WHIZZ BANGS ALL YEAR ROUND!

NOW you don't have to wait until bonfire night to have a firework display.

With these three simple programs you can have your Electron producing rockets, roman candles and catherine wheels.

And every one is a real whizz bang!

```
10 REM Rocket
20 MODE 1
30 PROCinit
40 REPEAT
50 SOUND &10,-15,7,55
  :SOUND &11,1,RND(255)
  ,55
60 XX=584
  :YX=192
  :DX=(RND(3)-2)*16
  :EX=12
  :GCOL 3,RND(6)+1
70 REPEAT
80 YX=YX+EX
  :EX=EX+6
90 MOVE XX,YX
  :VDU 226
  :MOVE XX,YX-32
  :VDU 227
  :MOVE XX,YX-64
  :VDU 228
100 MOVE AX,BX
  :VDU 226
  :MOVE AX,BX-32
  :VDU 227
  :MOVE AX,BX-64
  :VDU 228
110 AX=XX
  :BX=YX
  :XX=XX+DX
120 UNTIL YX>1120
130 UNTIL 0
140 DEF PROCinit
150 AX=0
  :BX=0
  :GCOL 0,15
160 VDU 23,224,&FF,&FF,&FF
  ,&FF,&FF,&FF,&FF,&FF
170 VDU 23,225,24,24,24
  ,24,60,60,60,&FF
180 VDU 23,226,16,56,124
  ,124,124,124,124,124
190 VDU 23,227,124,124,124
  ,124,124,64,64,64
200 VDU 23,228,64,64,64
  ,64,64,64,64,64
210 PRINT TAB(18,27);
  :VDU 225,8,10
  :FOR NX=1TO 3
  :COLOUR NX
  :VDU 224,8,10
  :NEXT
  :VDU 5
220 ENVELOPE 1,129,1,0,0
  ,250,0,0,126,0,0,12
  ,126,126
230 ENDPROC
```

ELECTRON

DESPITE looks of scorn from some of my BBC Micro-owning brethren I've always stuck up for Clive Sinclair's ZX Spectrum.

I think that for the money it's a great little machine and I know a lot of people are grateful to it for their introduction to the world of computers.

It's a nice micro with some good features and I've had a great deal of fun with it.

Given my affection for the Spectrum, I was intrigued about the new Electron, much vaunted as a rival to Uncle Clive's machine.

Would it be as good as the Spectrum or better? And if it was a better micro would the cost difference of some £75 to £100 (depending on which model Spectrum you take) be justified?

When I finally got my hands on an Electron I just had to do a comparison.

The first thing you notice when you come to the Electron after using a Spectrum is that it has a real keyboard. In fact at first it looks like that's all it is, but a little experience soon cures that misapprehension!

Using proper keys makes a real change from the

Spectrum, and it is nice not to feel that you have to have three hands. It's also good to be able to choose between typing in your Basic keywords letter-by-letter or to use the single key entry system.

With the ZX you just have the latter, where you press a key marked with the word you want and the whole thing flashes up on the screen.

Obviously single key entry is quite fast, but you have to do a lot of hunting on the Spectrum's keyboard for the right combination of keys.

On the Electron you don't have to worry. You can just type in the word you want if you can't find it on the keyboard. It's easier and more efficient.

Not only does the Electron score with its keyboard, but when you've entered a program you have a far better system of editing, or modifying, it than on the Spectrum.

The ability to copy text from one part of the screen to another together with the other editing facilities on the Electron are far better than on the ZX. This makes entering and amending programs far simpler and is a big plus for the Acorn machine.

Having said that, one thing the Spectrum does that the Electron doesn't is to check each line of a program before it is entered.

If there is a mistake, or syntax error, in the Basic it flags it and lets you correct it before it goes into the micro's memory. On the Electron you find your errors when you try to run the program.

This can be very frustrating when you've made several errors in a long listing like a games program. So the syntax check is a big plus in favour of the Spectrum.

But that is about the only

area where it does score – except, perhaps, that the more expensive Spectrum has 16k more memory than the Electron. Even so the Electron has 16k more memory than the cheaper rival, so they come out equal.

It's in the Basic that the Electron uses and the graphics facilities provided that it wins hands down.

The language that the Spectrum uses, ZX Basic, is a useful language and, as you can see from software produced using it, it can do a lot of clever things. But, compared with BBC Basic – the dialect of Basic the Electron uses – it is fairly primitive.

The Basic you get with the Electron is far more

V.

powerful and flexible. It allows you to produce your programs in what is known as a structured manner.

What this means is that it allows the development of programs in a logical and easy-to-follow style.

ZX Basic doesn't really lend itself to structured programming. This is a major drawback in a micro aimed at beginners. ZX Basic leads almost inevitably to poor programming habits – the lack of facilities it provides ensures this.

The Electron, with its superior Basic, will allow and encourage learners to program properly from the start. They'll thus avoid the development of the bad habits which our university computer departments have been warning us about for some time.

For someone who is at the start of what might be a lifetime in programming this is very much in the Electron's favour.

Again, to be fair, the Spectrum does have one Basic command that the Electron doesn't. This is CIRCLE – and very useful it is too. To state the obvious, it draws a circle!

A pity room couldn't be found for it in the Electron's vocabulary. Still the Electron has so many other structures which the Spectrum doesn't that it comes out way ahead.

What of the graphics? Both are colour computers, so how do they compare?

Well, I've always liked the Spectrum graphics facilities and found them easy to use and understand. But comparison with the graphics on the Electron with its seven modes and advanced commands shows that, here again, the Electron has the edge.

It's not that you get more colours with the Electron, you don't. But you can do a whole lot more with the ones you've got and they fill the whole screen.

Also, the graphics are a lot faster (though, again, the lack of a CIRCLE command is annoying). And you can define separate text and graphics windows on the screen, which is invaluable in creating good displays.

The additional graphics commands supplied with the Elcctron leave the Spectrum standing. They are just so much better.

It's a similar tale with the sound generator. The aptly-named BEEP command on the Spectrum can be made to do quite a lot, but it won't stand comparison with the Electron's SOUND command, which is far more versatile. When you combine it with the ENVELOPE com-

→

SPECTRUM

Nigel Peters

From Page 11

mand you move into a whole new dimension of sound generation.

Probably by now you'll have realised that I think that the Electron is a far superior beast to the Spectrum.

In all the areas discussed so far it has provided better facilities. However, I haven't yet mentioned the feature that appeals to me most about the Electron, a feature that the Spectrum just hasn't got.

This is the powerful 6502 assembler built into the Electron. Using this the seemingly formidable task of learning machine code language can be brought down to size.

And it's this point that should appeal to people who are buying a micro for the first time. Sooner or later, as their command of the micro increases, they will want to move on to using the language that the micro itself uses, machine code.

The Electron's assembler provides a fairly straightforward entry into this area. Sadly, while the assembler is one of the best features of the Electron, the very beginners who will benefit from it probably don't know enough about micros to appreciate just what they are getting. A pity, because the Spectrum has nothing comparable.

In lots of other ways the Electron scores over the Spectrum. Its RGB socket for output to a colour monitor and the video output are features the Spectrum lacks.

The system which allows storage of programs on cassette is far superior on the Electron. Then there's an internal clock, and the multiway adaptor provided at the back of the Electron promises far greater expansion possibilities than on the Spectrum.

In fact it will eventually be possible to turn your Electron into a fairly respectable copy of its big brother, the BBC Micro.

All in all, the Electron wins hands down. However, which is the better value for money? Are the extra features that you get worth the £70?

In my opinion they are. For anyone who can afford the choice and who wants a serious introduction to micros then the machine to go for is the Electron.

It comes down to this – the Spectrum is a good micro, but the Electron is a far better one.

Counting's child's play

With a little help from their parents

COUNTING is a simple, fun to play, learning game for very young children.

The program puts between one and nine "counters" on the screen for the child to count. The player presses the number calculated and, with appropriate noises for right and wrong, the computer counts out the counters.

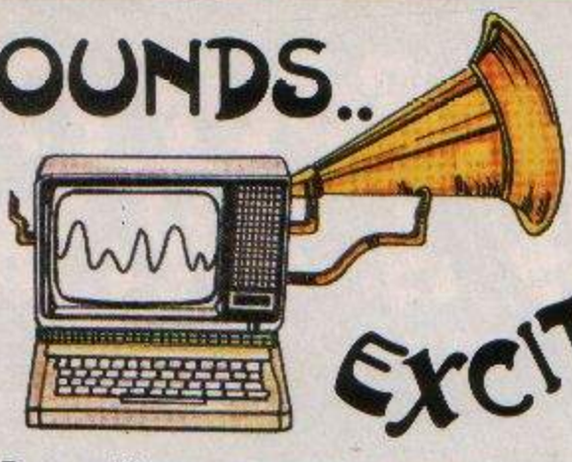
To have another go press the space bar. To finish press escape.

Beware, though, because it's not a game for children on their own. So parents should make sure you've got plenty of free time.

Children learn most by discussing their experiences with others. This program is designed to make full use of a child's most important educational resource – you!

```
10 REM COUNTING
20 REM (C) ELECTRON USER
30 MODE 1
40 DIM XPOS%(9),YPOS%(9)
50 ENVELOPE 3,4,90,-15
   ,-15,10,20,20,126,0
   ,0,-126,126,126
60 ENVELOPE 5,1,70,6,0
   ,31,10,0,126,0,0,-126
   ,126,126
70 VDU 19,0,3,0,0,0
80 VDU 19,3,4,0,0,0
90 VDU 23,224,1,3,7,15
   ,31,63,127,255
100 VDU 23,225,127,63,31
   ,15,7,3,1,0
110 VDU 23,226,252,248,240
   ,224,192,128,0,0
120 VDU 23,227,0,128,192
   ,224,240,248,252,254
130 SHAPE$=CHR$ (224)+
   CHR$ (227)+CHR$ (10)+
   CHR$ (8)+CHR$ (8)+
   CHR$ (225)+CHR$ (226)
140 REPEAT
150 CLS
160 NUMBER%=RND(9)
170 YSTEP%=31/NUMBER%
180 FOR LOOP%=1 TO NUMBER%
190 XPOS%(LOOP%)=RND(38)
200 YPOS%(LOOP%)=RND(YSTEP%-2)
210 COLOUR 1
220 PRINT TAB(XPOS%(LOOP%)
   ,(YSTEP%*(LOOP%-1)+YPOS%(
   LOOP%))) SHAPE$
230 NEXT
240 REPEAT
   :ANSWER$=GET$
   :UNTIL INSTR("123456789"
   ,ANSWER$)
250 IF VAL (ANSWER$)=NUMBER%
   THEN SOUND 1,3,100,-1
   ELSE SOUND 1,5,100,-1
260 COLOUR 3
270 FOR LOOP%=1 TO NUMBER%
280 PRINT TAB(XPOS%(LOOP%)
   ,(YSTEP%*(LOOP%-1)+YPOS%(
   LOOP%)));LOOP%
290 WAIT%=TIME
   :REPEAT UNTIL TIME >100+W
   AIT%
300 NEXT
310 *FX15,0
320 A$=GET$
330 UNTIL FALSE
```

SOUNDS.. EXCITING



BUILD up a library of exciting sounds to enhance your own programs with these listings. And many more in the months to come!

CRASH!

```
SOUND 0, 5, 4, 10
ENVELOPE 5, 6, 2, 20, 16, 16, 0, 0,
126, 0, 0, -126, 126, 126
```

IN THE FACTORY

```
SOUND 0, 1, 1, 56
ENVELOPE 1, 5, 1, 2, 0, 200, 0, 0,
126, 0,0,-126, 126, 126
```

GOING UP!

```
SOUND 1, 4, 30, 38
ENVELOPE 4, 16, 16, 1, 1, 200, 0, 0,
126, 0, 0, -126, 126, 126
```

FANFARE

```
SOUND 1, 2, 4, 50
ENVELOPE 2, 2, 6, 0, 0, 255, 0, 0,
126, 0, 0, -126, 126, 126
```

RED ALERT

```
SOUND 0, 3, 7, 80
ENVELOPE 1, 3, 6, 0, 1, 255, 0, 0,
126, 0, 0, -126, 126, 126
```

ELECTRIC SPARK

```
SOUND 0, -15, 7, 90
```

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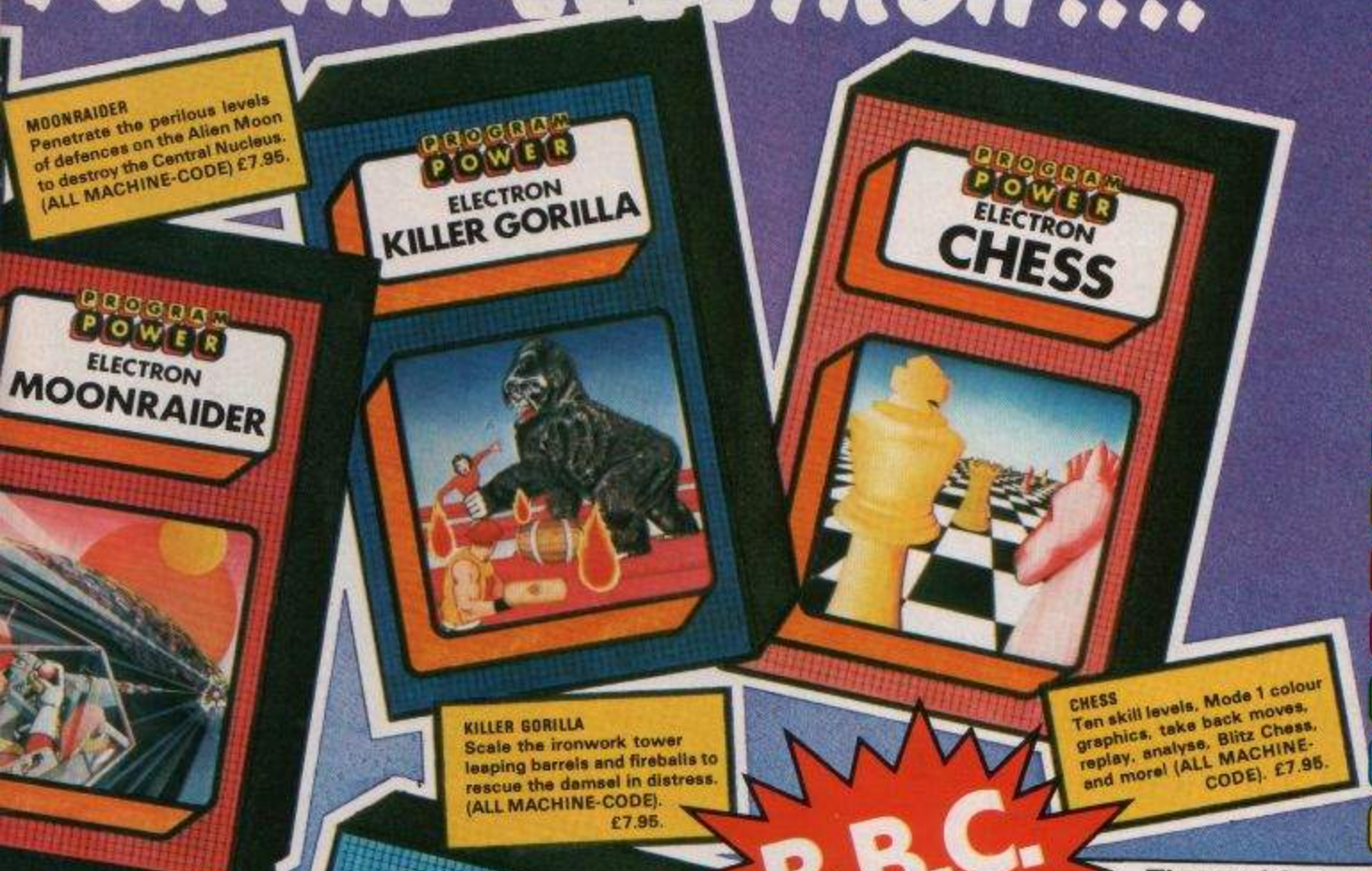

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